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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,640	09/21/2006	Marc Lemaire	RN02172G1	2919
<div><div><div>7590</div><div>07/05/2007</div></div><div>RHODIA INC CN 7500 8 CEDAR BROOK DRIVE CRANBURY, NJ 08512</div></div>				
			<div>EXAMINER</div> <div>NWAONICHA, CHUKWUMA O</div>	
			<div>ART UNIT</div> <div>1621</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE</div> <div>07/05/2007</div>	<div>DELIVERY MODE</div> <div>PAPER</div>

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/539,640

Applicant(s)

LEMAIRE ET AL.

Examiner

Chukwuma O. Nwaonicha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 65-93 is/are pending in the application.
- 4a) Of the above claim(s) 69-73 and 75-93 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 65-68 and 74 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Current Status***

1. This action is responsive to Applicants' amendment of 26 April 2007.
2. Claims 65-93 are pending in the application.

***Election/Restrictions***

Applicant's election without traverse of Group I (claims 65-68 and 74) in the reply filed on 26 April 2007 is acknowledged. Applicants are reminded of their right to file divisional applications to the non-elected claims.

Applicants' are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Priority***

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d)

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 65 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 65 is indefinite because of the variable "a group R". The group R is not define in the claim. Correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

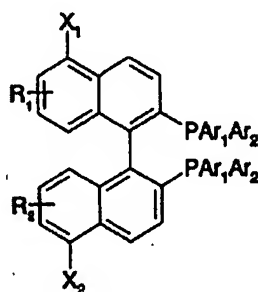
Claims 65-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lamouille et al., {Hydrogenation of ethyl acetoacetate catalyzed by hydrosoluble BINAP derivatives, Tetrahedron Letters (2001), 42(4), 663-664}, Ter Hallea et al., {Synthesis and evaluation of poly-NAP-Ru, an heterogeneous enantioselective catalyst, Comptes

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Rendus de l'Academie des Sciences, Serie IIc: Chimie (2000), 3(7), 553-556} or

Lemaire et al., {WO 2000049028 same as U.S. 6,610,875}

Applicants claim a diphosphine compound of formula 1; wherein all the variables are as defined in the claims.



formula 1

**Determination of the scope and content of the prior art (M.P.E.P. §2141.01)**

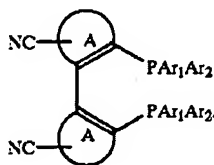
Lamouille et al. teach a new Ru hydrosoluble BINAP derivative, [6,6'-bis(aminomethyl)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl]ruthenium (II) dibromide dihydrobromide I. I was revealed to be enantioselective up to 94% and in the asymmetric hydrogenation of ethyl acetoacetate to ethyl (S)-3-hydroxybutanoate in a biphasic system. Poly(ethylene glycol)-substituted derivs. of 6,6'-bis(aminomethyl)-2,2'-bis(diphenylphosphino)-1,1'-binaphthyl were also prepared; the ruthenium complexes were effective catalysts for the hydrogenation of ethyl acetoacetate with moderate enantioselectivity, but the catalysts underwent a significant drop in effectiveness upon reuse.. See page 663.

Ter Hallea et al. teach a heterogeneous catalyst was synthesized by polymerization of a BINAP derivative followed by complexation with ruthenium. This catalyst showed high enantioselectivities for the hydrogenation of various substrates

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such as dehydroaminoacids,  $\alpha$ -ketoesters, olefins,  $\beta$ -ketoesters and ketones. The catalyst may be re-used four times with negligible loss of enantioselectivity and activity. See page 554.

Lemaire et al. teach a diphosphine compound of formula 2 wherein the variable A is an optionally substituted naphthly. See columns 28-30.



formula 2

**Ascertainment of the difference between the prior art and the claims (M.P.E.P..**

**§2141.02)**

Applicants claimed diphosphine compound of formula 1 differs from the diphosphine compounds taught by Lamouille et al., Ter Hallea et al. and Lemaire et al. in that applicants claimed diphosphine compound is an isomer (positional isomer) of those taught by prior art references cited. However, Lemaire et al. teach a diphosphine compound of formula 2 wherein the variable A is an optionally substituted naphthly while applicants claim a diphosphine compound of formula 1 wherein binaphthly group is substituted at the X<sub>1</sub> and X<sub>2</sub> positions.

**Finding of prima facie obviousness--rational and motivation (M.P.E.P.. §2142-**

**2143)**

The instantly claimed diphosphine compound of formula 1 would have been suggested to one of ordinary skill because one of ordinary skill wishing to produce a

reactive catalyst is taught to select the catalyst from the genus of Lamouille et al., Ter Hallea et al. or Lemaire et al.

One of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by varying the substituents of the genus of Lemaire et al. to arrive at the instantly claimed diphosphine compound of formula 1 for producing a polymeric products. Said person would have been motivated to practice the teaching of the references cited because they demonstrate that diphosphine compounds are useful in organic synthesis. The instantly claimed invention would therefore have been obvious to one of ordinary skill in the art.

#### **Allowable Subject Matter**

Claim 74 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### **No Claim is allowed.**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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